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10/808,145

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Paul Georg Lindt

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EXAMINER

WEINMAN, SEAN M

ART UNIT

PAPER NUMBER

2115

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/808,145	<b>Applicant(s)</b> LINDT, PAUL GEORG	
	<b>Examiner</b> Sean Weinman	<b>Art Unit</b> 2115	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

*Claims 1-13* are presented for examination.

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### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

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*Claims 1-13* are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

*Claim 1* recites the limitation "the received measurement vectors" in line 16 of page 30.

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There is insufficient antecedent basis for this limitation in the claim. Additionally, claim 1 recites the limitation "a received measurement vector" in line 22 on page 30. It is unclear whether this is intended to be the same as or different from the "received measurement vector" in line 16 on page 30. Additionally, claim 1 recites the limitation "a corresponding reference vector" in line 23 on page 30. It is unclear whether this is intended to be the same as or different from the "a corresponding reference vector" in line 18 on page 30.

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*Claim 3* recites the limitation "a next measurement vector" on line 28 on page 32. It is unclear whether this is intended to be the same as or different from the "next measurement vector" on line 31 on page 31. Additionally, claim 3 recites the limitation "the last measurement vector" in line 29 of page 32. There is insufficient antecedent basis for this limitation in the claim. Additionally, claim 3 recites the limitation "the last reference vector" in line 33 of page

32. There is insufficient antecedent basis for this limitation in the claim. Additionally, claim 3 recites the limitation “a reference vector” in line 34 on page 32. It is unclear whether this is intended to be the same as or different from the “a reference vector” in line 23 on page 30.

*Claim 9* recites the limitation “the maximum skew” in line 17 on page 34. There is insufficient antecedent basis for this limitation in the claim. Additionally, claim 9 recites the limitation “a relative skew” in line 20 on page 34. It is unclear whether this is intended to be the same as or different from the “relative skew” in line 26 on page 30.

Any claim not specifically addressed is being rejected as incorporating the deficiencies of a claim upon which it depends.

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### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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***Claims 1 and 4-13*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US Patent No. 6,031,847) in view of Deas et al. (US Patent No. 6,820,234).

***As per claim 1***, Collins et al. teach the claimed invention comprising:

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Method for measuring and compensating skews of data transmission lines connecting at least one data transmission device (*Figure 3 Reference character 301*) with a data reception device (*Figure 3 Reference character 302*) via a parallel data bus comprising for each data transmission line (*Col. 6 lines 29-34*) the following steps:

shifting the received measurement vectors by inserting data unit intervals until a received measurement vector matches a corresponding reference vector (*Col. 4 lines 35-41 and Col. 8 lines 2-7*);

calculating a relative skew of the data transmission line depending of the number of  
5 inserted data unit intervals with respect to a slowest data transmission line (*Col. 7 lines 41-55*);  
and compensating the calculated relative skew of the data transmission line by means of delay elements switched in response to the calculated relative skew (*Col. 4 lines 35-41, Col. 8 lines 2-7, and Col. 7 lines 41-55*);

Collins et al., however does not teach transmitting measurement vectors with alternating  
10 bit patterns and different frequencies to receiver that are then compared to a reference vector to calculate the skew of the transmission system. Specifically, Collins et al. teach inserting delay units to calculate the relative skew of the system and then adjusting the delay of the units of each line so that the system can compensate for the skew of the transmission system. Collins et al. does not teach transmitting a determined sequence of measurement vectors each consisting of an  
15 alternating bit pattern, wherein the bit alternation frequency is halved with every transmitted measurement vector and then compare the received measurement vectors transmitted with corresponding reference vectors stored in the reception device.

Deas et al. teaches transmitting alternating pattern with a frequency and then comparing the received vector with a reference vector to calculate the skew of the transmission system.  
20 Deas et al teaches measuring the relative time delay of the data transmission line by transmitting a determined sequence of measurement vectors each consisting of an alternating bit pattern via said data transmission line (*Col. 14 lines 1-8*), wherein the bit alternation frequency is halved

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with every transmitted measurement vector (*Col. 21 lines 51-67 and Col. 22 lines 1-23*);  
comparing the received measurement vectors transmitted via said data transmission line with  
corresponding reference vectors stored in said data reception device (*Col. 14 lines 1-8*);

It would have been obvious to combine the teachings of Collins et al. and Deas et al.

- 5 because they both teach skew calibration of transmission systems. Deas et al. teaches the  
deficiency of Collins et al. by teaching transmitting measurement vectors with alternating bit  
patterns and different frequencies to receiver that are then compared to a reference vector to  
calculate the skew of the transmission system.

*As per claim 4*, Collins et al. teach the claimed invention comprising:

- 10 wherein the method is performed when the data reception device is powered up (*Figure  
13*).

*As per claim 5*, Collins et al. teach the claimed invention comprising:

- wherein after compensation the skew of all data transmission lines is accomplished data  
are transmitted from the data transmission devices to the data reception device in a normal data  
15 transfer mode (*Figure 13*).

*As per claim 6*, Deas et al. teach the claimed invention comprising:

wherein the data transmission devices are DRAMs (*Col. 13 lines 46-56*).

*As per claim 7*, Deas et al. teach the claimed invention comprising:

wherein the data reception device is a HUB of a memory module (*Col. 13 lines 46-56*

- 20 *Deas does not explicitly teach a HUB of a memory controller but it would have been obvious to  
one of ordinary skill in the art to have the data reception device of the memory module being a  
HUB*).

*As per claim 8*, Collins et al. teach the claimed invention comprising:

comprises for each data transmission line a clock and data recovery unit to lock to the first measurement vector transmitted via said data transmission line (*Figure 4 Reference characters 310-313*).

5        *As per claim 9*, Collins et al. teach the claimed invention comprising:

wherein for compensating the skew of a data transmission line the following sub-steps are performed: a) determining the maximum skew of the calculated skews of all data transmission lines; b) calculating a relative skew of each data transmission line with respect to the maximum skew of the slowest data transmission line, c) and delaying each data transmission  
10    line with its calculated relative skew (*Col. 4 lines 35-41, Col. 8 lines 2-7, and Col. 7 lines 41-55*).

*As per claim 10*, Collins et al. teach the claimed invention comprising:

wherein the data transmission devices are activated by means of a request signal sent via a separate command line from the data reception device to the data transmission devices (*Figure 13 Collins et al. does not explicitly teach a command line to activate the transmission device but*  
15    *it would have been obvious to one of ordinary skill in the art that a command line must be present in order for the system to activate the memory devices after power up and also to command the system to send the signals when the system is not properly calibrated*).

*As per claim 11*, Collins et al. teach the claimed invention comprising:

wherein the data transmission devices are activated simultaneously (*Col. 10 lines 18-24*).

20        *As per claim 12*, Collins et al. teach the claimed invention comprising:

wherein the data transmission lines form part of a bidirectional data bus (*Figure 14*).

*As per claim 13*, Collins et al. teach the claimed invention comprising:

wherein the comparing of the received measurement vectors the reference vectors is performed by means of an EXOR logic (*Figure 10 It would have been obvious to one of ordinary skill in the art to use an XOR logic because XOR logic would be able to identify easily if the measurement vector did not match the reference vectors*).

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### ***Allowable Subject Matter***

***Claims 2 and 3*** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Weinman whose phone number is (571) 272-2744. The examiner can normally be reached on Monday-Friday from 8:00-4:30.

15 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on (571) 272-3667. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications  
20 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR




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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sean Weinman  
Examiner  
Art Unit 2115

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